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**FEDERAL OFFICE OF INTELLECTUAL PROPERTY**

**MAIN PATENT**

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**METHOD OF CONSTRUCTING BUILDINGS**

Erberto Biggi, Massa Carrara (Italy) has been designated as inventor

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The subject matter of this invention is a construction method used in building prefabricated buildings by means of interlocking panels. Said panels, used according to the subject method, are an integral part of this invention.

The purpose of this invention is to achieve a construction method, of the type mentioned above, which makes it possible to quickly build an insulated building that is resistant to the elements and requires minimum labor.

According to the invention, the above method includes the following steps: preparation at the factory of the cavity panels equipped with a male and a female interlock along their two vertical parallel edges; assembly of said panels by sequentially interlocking them in order to create the outside and inside walls; locking the horizontal edges of the walls and the corners by means of metal sections; creation of window openings in said panels; and, finally, assembly of the roof by means of horizontal structures supported by said metal sections and stiffening elements.

The panel used to carry out the above method consists of two superimposed boards with two parallel strips inserted between them. One of these strips protrudes on one side of the panel to become the male interlock. The other one is set back inside the panel - as much as the first strip protrudes from the panel - to create the female interlock.

The panel achieved with this method is compact, strong and is complete with airspace.

From this point on, the invention will be described by referencing the enclosed drawings. These drawings depict one example - but not limited to it - which is one of the preferred ways to execute this invention.

**Drawings:**

Figure 1 is an exploded view showing how each panel is made up;  
Figure 2 is a partial perspective view showing an assembled panel;  
Figure 3 shows the measuring tool used to build the panels;  
Figure 4 is a cross-sectional view showing two panels secured at a corner;  
Figure 5 is a horizontal sectional view showing the installation of a casing;  
Figure 6 shows the installation of a window counterframe;  
Figure 7 and Figure 8 illustrate two options for installing the roof.

Observe Figures 1 and 3. The panels are comprised of two boards - preferably chipboards of any type or brand available on the market (i.e. Eraclit, Populit, Carpilite - deposited brands).

Said boards 1 are kept apart by two strips, 2 and 3, made of the same material, which can be of varying thickness according to situation requirements. Strips 2 and 3 are laid out so that one of the two is secured a few centimeters back between the two boards, while the other one extends the same distance [a few centimeters] from the two boards to create a system of subsequent male and female panel interlocks. The distance between the two strips creates an air space - indicated by the number 4.

Boards 1 and strips 2 and 3 are assembled together, to form a panel, using glue of any type available on the market or by using metal filament stitching/staples, textile stitching/staples or dogs, nails, bolts, screws or by using a nail gun, or any other appropriate means.

Each panel is built as follows: a chipboard, of the types explained beforehand, is laid on a horizontal plane. Then, strips 2 and 3 are positioned and properly spaced using a measuring tool so that one is glued back inside the board (female) and the other one extends out by the same distance (male). These two strips and the two wooden elements 5 that are glued or nailed into place in the upper and lower part of the panel that is being assembled create air space 4. The thickness of the two elements 5 is equal to the thickness of the strips. These wooden pieces prevent feathering problems during shipment and assure that strips 2 and 3 remain in their correct position/distance. After application of the glue, these parts are covered with another chipboard, which is also positioned using the measuring tool. This chipboard must be perfectly flush and square with the first board. This is how the first panel is built.

The second panel is built by repeating the aforementioned procedure directly on top of the first panel, and so on. The panels are built and laid on top of each other in this manner during assembly and because of their weight, there is no need for presses which are normally required during the drying time of the glue used in the process.

This type of panel is self-supporting and offers good thermoacoustic properties, and it does not rot.

In order to construct a building, the panels are locked into each other and held by an L shaped steel element 6 (Figures 4-8) of the appropriate size. While the panels are being momentarily held in place, a U steel channel 7 is lowered on top of them. This element is equipped with wings pointing downward. The distance between each wing is equal to the thickness of the panel. By following this method, it is possible to build a wall of any length by first joining the steel sections together using normal bolted down boards any time a steel section rod, or another material, is required. The walls are joined at the corners (Fig. 4) by special W shaped sections 8, that are built so that the length of each side matches the thickness of the panel. The flat steel elements 9 are installed on the inner side and are appropriately sized so that they match the faces of the external structural section. Then, two anchoring angles are bolted at any angle between these sections. The terminal panels on the corners of the walls are built in the following special manner: the male strip is set back, flush with the external boards, thus creating a completely solid assembly through which the connection bolts 10 are driven, as in Figure 4.

The walls are installed whole, before creating the openings for the windows. The windows are cut, in any location and in any size with a motor chain saw, along the desired pattern, after the walls are installed. After cutting the window opening, a wooden U shaped counterframe 11 is installed. This counterframe is built with deep wings to cover any cutting imperfections and any fraying that may be present. These sections are beveled at 45 degrees (see Figures 5 and 6) so that it is possible to install the posts and the cross beams for the entire perimeter to allow installation of a normal window with shutters - secured with screws and bosses - and marble sill. Staff beads are placed both externally and internally to create an overlapping coverage of the counterframe. The open area for the doors can be made in any size by simply leaving out the necessary panels. The two panels face the open area for the door with their female side, which is force filled with wood to build the counterframe on which a normal door or balcony door frame will be mounted. It is possible to design wooden transoms with beaded glass to fill up the total height of the wall.

Figures 7 and 8 illustrate two roofing options.

The following is to be installed on structural profiles 7, with U-shaped downward channel: anchoring squares for normal trusses or king-post trusses, made out of elements that can be of any shape, size and quantity. It is necessary to take into consideration the need for perforated plates/boards - depending on the type of ceiling that it is going to be installed - which are necessary for applying wooden lists 12. These wooden lists are ready to receive/install ceiling panels, internally, and beaded panels on the outside. At this point, the building is still unfinished. The finishing can be done by applying normal construction plaster, boards of asbestos cement, boards of plastic material of any type, colored jute or other appropriate materials. Painting can be done in the traditional way.

## CLAIMS

I. A Method to build buildings characterized by the fact that it includes the following phases: Preparation of the cavity panels at the factory - these panels feature, along the two parallel vertical edges, a male and a female interlock element; Assembly of said panels on location by interlocking them to create the outside and inside walls; Locking of the horizontal edges of the walls as well as locking of the corners by means of metal sections; Cutting out the openings for the windows in said panels; and, finally, Roofing by means of horizontal structures resting on said stiffening metal sections.

II. Panel used according to the method illustrated at point I, characterized by the fact that it includes two overlapping boards which are spaced out by two parallel strips. One of these strips, the male interlock, extends out of one side, while the other one, the female interlock, is set back into the panel. The measurement of the protruding section of the male interlock equals the measurement of the female interlock set back. -

## SUBCLAIMS

I. The method according to Claim I characterized in that the lower edge of the walls created by above panels rest on an L shaped angle iron, while the upper edge is inserted in an upside down U-shaped channel. The panels are secured to said sections through pass-through locking elements.

2. The method according to Claim I characterized in that the panels are joined at the corners by means of W shaped metal sections that are secured on said panels by means of bolts and counterplates that are installed by the corner on the inner side of the panels.

3. The method according to Claim I characterized in that the openings for the doors are created by interrupting the series of panels over a distance that is equal to the opening of the door. A frame complete with door and transom is installed in said opening.

4. The method according to Claim I characterized in that the panel edges, at the corners and at the openings left out for the doors, which feature the male interlock, lose the protruding part of said element.

5. The method according to Claim I characterized in that the window openings are obtained by cutting out the appropriate area of the panel using a motor saw. The counterframe installed in said opening consists of four U-shaped elements with 45 degree corners.

6. The method according to Claim I characterized in that the roofing is installed on metal plates/boards at right angles. Said metal plates/boards are anchored onto the stiffening sections.

7. The panel according to Claim II, which is characterized in that the boards and the strips are made of chip material.

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